



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

SUBJECT: 12th Street Dump Site
Wilmington, DE

DATE: Jan. 26, 2000

FROM: Michael Towle, OSC
EPA III

TO: Chris Guy, USFWS
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This memorandum transmits the findings of the soil screening effort recently implemented by EPA at the 12th Street Landfill/Dump Site pursuant to our recent discussions. This memo also outlines my preliminary thinking on a suitable remedy for the Site. Please review and let me know of your comment as soon as possible. I am now preparing the funding request for a Removal Action.

This memo also requests that we identify Applicable or Relevant and Appropriate Requirements for the Removal Action. I am assuming from my past discussions that all agree that an action is necessary and that EPA will approve a funding request. Once the threat memo is put together, I'll forward the request for action to the Potentially Responsible Parties and initiate preparatory activities.

The soil and sediment samples were collected from surface soil at the Site and from the mud flat of the Brandywine River alongside the Site. The data resulting from screening soil samples with XRF technology completed by DNREC personnel is summarized below.

DATA REVIEW

A major goal of the screening effort was to characterize the level of lead in the sediment of the Brandywine River in the vicinity of the Site. Only two sediment samples are truly "upriver" from the fill area since there is a "seawall" next to the Site. The upriver samples show 40 and 187 mg/kg lead. The background lead sample was 42 mg/kg.

The lead concentration in the 22 sediment samples collected along the obvious mounded fill area (Site) ranges from 15 to 4674 mg/kg. Overall 6 samples exceed 1000 mg/kg, and an additional 7 samples exceed 100 mg/kg. There are two areas where multiple samples exceed 500 mg/kg. The areas with multiple samples exceeding 500 mg/kg are areas where drainage is

allowed to exit the fill area. The lead concentration in 8 sediment samples collected downriver range from 20 to 94 mg/kg. Thus, the sediment data indicate that the Site has contributed lead to the River environment and the effects are limited to the immediate area of the fill. Our field efforts also found that much of the "mud flat" is really mud deposited over rip rap.

Screening results indicate that the fill material contains lead. Nine surface and nine subsurface soil samples collected from within the obvious and mounded fill area contain lead concentrations from 98 to 28,600 mg/kg lead (average concentration is 5032 mg/kg). Most samples had concentrations above 2000 mg/kg. Considering the XRF data along with analytical data previously collected by EPA and DNREC confirms that the fill contains elevated concentrations of a number of contaminants, but lead is the most significant.

One of the goals of the screening effort was to try and determine if the lead contamination was limited to the obvious and mounded fill area. It is not. Samples were collected from locations 25 feet beyond the obvious and mounded fill. The dirt in this outer area contained signs of hose and debris similar to that found by EPA in the mound. The lead concentration in the outer soil area ranged from 2240 to 3250 mg/kg indicating that the lead contamination is either a) originating from a larger area, or b) has contaminated the low area over years of erosion. Soil samples collected even further away from the obvious mound are lower in lead concentration (225 - 716 mg/kg), but are not representative of the area of concern since they were collected from the pile of soil fill which may have resulted from the construction of I-495. It is my opinion, based upon a review of aerial photographs, that the contaminated fill extends over an area that is larger than the mounded area.

A goal of the screening effort was to determine the lead concentration of the soil currently eroding into the River. Samples were collected from the eroded face of the fill which makes up the bank of the Brandywine River. The lead concentration of 6 samples collected along the fill area from the steep bank range from 2333 to 13,890 mg/kg. The River bank is poorly vegetated. Although there are trees in the bank, they have fallen or extend out of the bank in a number of locations as the bank material erodes away. The River undercuts the bank to a depth of 6 to 12 inches in a number of locations. The bank is protected from failure by the trees, but is not protected from daily, seasonal, or storm-related erosive forces. Five samples of soil collected from the stream bank further downriver show lead concentrations ranging from 35 to 297 mg/kg supporting the fact that the fill area of the Site is the source of the lead.

PROBLEM

Erosion of soil from the 12th Street Landfill/Dump Site contributes hazardous substances to the environment of the Brandywine River. The EPA/DNREC data show, for example, that the concentration of lead in the sediment of the Brandywine River is increased by at least a factor of 10 at the Site, especially in two defined areas. The effect that lead has upon the environment of the Brandywine is not specifically established. The NOAA screening level for lead in the sediment is between 91 and 127 mg/kg. The relatively remote location of this Site and the limited area of apparent environmental impact does not suggest that a human health threat exists via direct contact pathways.

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PROPOSED REMOVAL

The proposed removal action is intended to remove isolated areas of contaminated seiment and reduce or eliminate erosion of the contaminated fill material into the Brandywine River. The contaminated sediment can be easily removed from the areas where it is deposited over rock. The action does not propose to remove all contaminated soil which is estimated at over 30,000 yards. The proposed removal relies upon reconfiguring the existing bank by removal of material, installation of a new stream bank, cover of contaminated areas (with special attention upon the new bank area), and installation of an appropriate vegetative cover to achieve the reduction in erosion. The proposed removal would also include removal and disposal of high concentration waste sources (e.g., drums) and reconfiguring Site drainage to minimize erosive flow and to control drainage into the River. All activities would be conducted under a master erosion and sedimentation control plan consistent with requirements of Delaware or in consultation with DNREC. The proposed removal presumes Agency acceptance.

Additional sample collection

- 1) Collect/analyze samples of deeper sediment to define depth of removal
- 2) Conduct bioassay testing of contaminated soil
- 3) develop PRGs to assist with selection of appropriate stream bank design

Removal action

- 1) Develop Master E&S Control Plan
- 2) Implement temporary Site access control and improvements
- 3) Implement temporary Site E&S, fugitive emission controls
- 4) Remove contaminated sediment (non-excavation methods)
- 5) Erect "barrier" between the Site and the Brandywine River
- 6) Remove vegetation from existing stream bank
- 7) Slope/remove contaminated stream bank to facilitate new construction
- 8) Install new stream bank (type dependent upon PRGs)
- 9) Remove drum wastes and other high contamination sources
- 10) Remove necessary contaminated soil (i.e., to enable proper grades)
- 11) Regrade contaminated soil area to minimize erosive movement
- 12) Cover contaminated soil areas with suitable materials
- 13) Install permanent erosion control facilities , including suitable vegetation
- 14) Remove temporary access control and improvements as necessary